

CLAIMS:

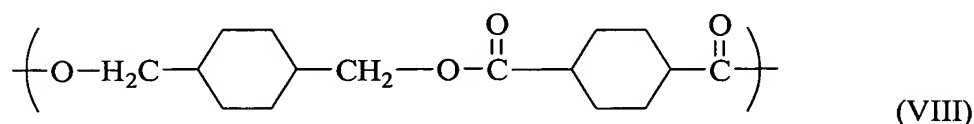
1. An appliance for use in an oral cavity, wherein the appliance comprises a polymeric shell that comprises a polymeric mixture, and further wherein the polymeric shell has cavities designed to receive teeth.

2. The appliance of Claim 1, wherein the polymeric mixture comprises a thermoplastic polymer.

3. The appliance of Claim 2, wherein the thermoplastic polymer is a polyolefin, polyamide, polyester, polyarylate, polyimide, polyacetal, polyacrylic, polycarbonate, polystyrene, polyamideimide, polyacrylate, polymethacrylate, polyurethane, polyarylsulfone, polyethersulfone, polyarylene sulfide, polysulfone, polyetherimide, polytetrafluoroethylene, polyetherketone, polyether etherketone, polyarylene ether, polydimethylsiloxane, liquid crystalline polymer, polybenzoxazole, polyoxadiazole, polybenzothiazinophenothiazine, polybenzothiazole, polypyrazinoquinoxaline, polypyromellitimide, polyquinoxaline, polybenzimidazole, polyoxindole, polyoxoisindoline, polydioxoisindoline, polytriazine, polypyridazine, polypiperazine, polypyridine, polypiperidine, polytriazole, polypyrazole, polypyrrolidine, polycarborane, polyoxabicyclononane, polydibenzofuran, polyphthalide, polyacetal, polyanhydride, polyvinyl ether, polyvinyl thioether, polyvinyl alcohol, polyvinyl ketone, polyvinyl halide, polyvinyl nitrile, polyvinyl ester, polysulfonate, polythioester, polysulfonamide, polyurea, polyphosphazene, polysilazane, or a combination comprising at least one of the foregoing thermoplastic polymers.

4. The appliance of Claim 1, wherein the polymeric mixture is a polycarbonate-cycloaliphatic polyester.

5. The appliance of Claim 4, wherein the polymeric mixture comprises a cycloaliphatic polyester having recurring units of formula (VIII)



6. The appliance of Claim 4, wherein the cycloaliphatic polyester is polyethelene terephthalate, polybutylene terephthalate, poly(1,4-cyclohexanedimethanol-1,4-cyclohexanedicarboxylate), poly(trimethylene terephthalate), poly(cyclohexanedimethanol-co-ethylene terephthalate), poly(ethylene naphthalate), polycarbonate-poly(butylene naphthalate), or a combination comprising at least one of the foregoing cycloaliphatic polyesters.

7. The appliance of Claim 4, wherein the polycarbonate-cycloaliphatic polyester comprises a polycarbonate having a number average molecular weight of about 500 to about 1,000,000 grams/mole and a cycloaliphatic polyester having a molecular weight of about 500 to about 1,000,000 grams/mole.

8. The appliance of Claim 7, wherein the polycarbonate-cycloaliphatic polyester mixture comprises a polycarbonate having a number average molecular weight of about 9,000 to about 38,000 grams/mole and a cycloaliphatic polyester having a molecular weight of about 40,000 g/mole to about 55,000 grams/mole.

9. The appliance of Claim 4, wherein the polycarbonate is present in an amount of about 20 to about 80 wt% and the cycloaliphatic polyester is present in an amount of about 20 to about 80 wt%, based on the total weight of the polycarbonate-cycloaliphatic polyester mixture.

10. The appliance of Claim 1, wherein the polymeric mixture has an elastic modulus of greater than or equal to about 1,500 Newton/square millimeter when measured in tensile deformation at a rate of 2 millimeters/minute at room temperature, prior to use in an oral cavity.

11. The appliance of Claim 1, wherein the polymeric mixture has a percent stress retention of greater than or equal to about 40%, prior to use in an oral cavity.

12. The appliance of Claim 1, wherein the polymeric mixture has a stain resistance Delta E of less than or equal to about 2, prior to use in the oral cavity.

13. The appliance of Claim 1, wherein the polymeric mixture has a yellowness index of less than or equal to about 1 and a percent haziness of less than or equal to about 0.5, prior to use in an oral cavity.

14. The appliance of Claim 1, wherein the polymeric mixture has a percent stress retention of greater than or equal to about 40%, an elastic modulus of greater than or equal to about 1,500 Newton/square millimeter when measured in tensile deformation at a rate of 2 millimeters/minute at room temperature, a stain resistance Delta E of less than or equal to about 2, a yellowness index of less than or equal to about 1 and a percent haziness of less than or equal to about 0.5, prior to use in an oral cavity.

15. The appliance of Claim 1, wherein the polymeric shell has a thickness of about 125 to about 1,250 micrometers.

16. The appliance of Claim 1, wherein the polymeric shell comprises two or more layers.

17. The appliance of Claim 16, wherein one layer comprises an elastomer.

18. The appliance of Claim 1, wherein the appliance is part of a system of appliances designed to reposition teeth.

19. A method for maintaining or repositioning teeth in the oral cavity comprising:

placing an appliance in a patient's mouth, wherein the appliance comprises a polymeric shell that comprises a polymeric mixture, and further wherein the polymeric shell has cavities designed to receive teeth.

20. The method of Claim 19, wherein additional appliances may be placed in a patient's mouth, and wherein a tooth position defined by a single cavity in each successive appliance differs from that defined in a prior appliance by an amount of no more than 2 millimeters.

21. A method of manufacturing an appliance comprises:

mixing two or more thermoplastic polymers in a melt blending device to form a polymeric mixture;

forming the polymeric mixture into a sheet; and

thermoforming the sheet over a replica of a patient's teeth.

22. The method of Claim 21, wherein the thermoforming is conducted at a temperature of about 120 to about 180°C.

23. An article manufactured by the method of Claim 21.